SPECIAL PROVISION
PROJECT # F-007(23)9
PIN # 5865

SECTION 03925S

URETHANE LEVELING GROUT FOR PRECAST CONCRETE PAVEMENT PANELS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Materials and procedures to furnish and install urethane grout to support precast concrete pavement panels.

1.2 RELATED SECTIONS

A. Section 02721: Untreated Base Course
B. Section 02752: Portland Cement Concrete Pavement
C. Section 02754: Dowel Bar Retrofit
D. Section 02981: Grinding Pavement
E. Section 03055: Portland Cement Concrete
F. Section 03152: Concrete Joint Control
G. Section 03211: Reinforcing Steel and Welded Wire

1.3 REFERENCES

A. ASTM D 790: Flexural Properties of Un-reinforced and Reinforced Plastics and Electrical Insulating Materials.
B. ASTM D 1621: Compressive Properties of Rigid Cellular Plastics.
C. ASTM D 1622: Apparent Density of Rigid Cellular Plastics.

1.4 DEFINITIONS

A. Precast Concrete Paving Panels, (PCPP): A non-proprietary system of precast panels of fixed dimension, installed on a carefully repaired base and compacted bedding material, with urethane leveling grout to support panels. Portland cement concrete pavement panels manufactured off-site under controlled conditions. Pavement sections are part of an overall system designed for rapid installation in the field.
B. Urethane Leveling Grout: A high density polyurethane material that is injected as a flowable foam through holes in the precast concrete pavement panels to fill voids between the earth grade and bottom surface of the precast pavement panels. Urethane grout hardens within minutes to provide a uniform material capable of supporting the precast concrete pavement panels and traffic.

1.5 SUBMITTALS

A. Material properties for urethane leveling grout for review and approval by the Engineer at least 7 calendar days prior to placement.
B. Placement and Installation plan detailing equipment, availability of materials, labor, schedule and storage of materials for review and approval by the Engineer at least 7 calendar days prior to installation.
C. Material Safety Data Sheets (MSDS) describing safety concerns, handling and storage issues of the urethane materials.
D. Quality Control/Quality Assurance plan for the manufacturing, mixing, storage, and placement of the materials.
E. Name of Quality Control Supervisor to be available at all times during placement of urethane leveling grout.
F. Certification of Warranty of materials and workmanship for a period of 1 year against shrinkage and deterioration.

PART 2 PRODUCTS

2.1 URETHANE LEVELING GROUT:

Water based formulation of expanding high-density polyurethane used for raising concrete slabs of filling voids, that sets to 90% of full strength within 30 after injection at 40 degrees F or greater.

A. Material Properties (at 40 degrees F or greater):

1. Density: using ASTM D-1622; Minimum of 5.9 lb/ft3 and maximum of 6.1 lb/ft3.
2. Tensile Strength: Using ASTM D-790: Minimum of 120 psi using flexural strength or flexural yield as tensile strength.
3. Elongation: Maximum of 5.1%.
4. Compressive Strength: At yield point using ASTM D-1621; Minimum of 90% of 90 psi within 30 minutes of injection.
5. Shear Strength: using ASTM C-273; 60-130 psi.

B. Warranty: Supplier warrants all materials and workmanship for a period of one year against shrinkage or deterioration under normal weather and traffic conditions.

2.2 EQUIPMENT

Equipment capable of storing, mixing, injecting and measuring urethane grout materials.

A. Materials Storage: Totes and mixing vessels capable of safely storing material to prevent damage from elements and capable of meeting daily production schedules.

B. Mixing Truck: capable of storing, blending and pumping urethane grout as a homogeneous material at a control rate.
C. Hoses and Nozzles: capable of transferring urethane grout material from mixing truck to injection site.
D. Drills, levels and other miscellaneous equipment: capable of drilling small injection holes, power tools, compressors and electrical generators necessary to perform the work.
E. Profile equipment: capable of measuring changes in elevation and profile of the concrete panels to an accuracy of 1/8" or smaller.

PART 3 EXECUTION

3.1 PREPARATION

A. Coordinate delivery of materials and equipment prime contractor's schedule to have urethane grout, equipment, and installation labor available at least 24 hours prior to the removal of any existing pavement.
B. Coordinate the fabrication of injection ports or location of drilling locations for injection of urethane leveling grout prior to fabrication of panels.
C. Participate in a Preconstruction meeting and Highways for Life Showcase events.
D. Provide contingency instructions and/or alternate materials for potential extreme weather events.

3.2 INSTALLATION

A. Drill injection holes into precast concrete panels if not already pre-fabricated.
B. Install or set up injection fittings and profile measuring equipment.
C. Blend materials using mixing truck and dispense using pressurized hoses and nozzles.
D. Measure material volumes, quantities, application rates, and gel times.
E. Clean and dispose of excess urethane grout material that flows beyond the perimeter of precast concrete pavement panels.
F. Fill injection holes with non-shrink grout.

END OF SECTION